AMENDMENT TO THE CLAIMS

1. (currently amended) A data management apparatus for managing ~~a plurality of~~ data ~~which are~~ used ~~in order to execute~~ when executing an application program included in a switching system for providing services related to communication ~~by a switching system~~, comprising:

a data field storing the ~~plurality of~~ data;

an address acquirer acquiring an address ~~of the data~~ in said data field of the data for which an access is requested by the application program;

a lending pointer table storing at least one of pointer records, ~~having~~ each of which has the acquired address and a pointer corresponding to the acquired address, the pointer indicating an address of the pointer record; and

a lender reading out the pointer from said lending pointer table ~~and lending~~ to lend the read pointer to the application program.

2. (currently amended) A data management apparatus according to Claim 1, further comprising:

a reader receiving the lent pointer from the application program, reading out the address corresponding to the lent pointer from the lending pointer table, reading out the data ~~storing~~ stored in said data field according to the read address ~~in said data field~~, and giving the read data to the application program, wherein the address stored in the pointer record is changed into an address of a relocation destination in the data field in response to relocation of the data stored in the data field.

3. (currently amended) A data management apparatus according to Claim 2, further comprising:

a deleter deleting ~~a~~ the data ~~from~~ stored in said data field; and

a record deleter deleting the pointer record having the address in said data field of the data which is deleted by said deleter, from said lending pointer table.

4. (currently amended) A data management apparatus according to Claim 3, further comprising:

an invalidity informer informing the application program of invalidation of the lent pointer ~~in~~when the record deleter deletes the pointer record ~~which is deleted by said record deleter~~ having the lent pointer.

5. (currently amended) A data management apparatus according to Claim 2, further comprising:

a relocater relocating the data stored in said data field; and

an address updater detecting ~~the address of the data which is relocated by said relocater from said lending pointer table~~ the pointer record having the address in said data field of the data that is relocated by the relocater, from the lending pointer table, and updating the address in said data field stored in the detected ~~address~~ pointer record according to ~~an address after the~~ a result of relocation ~~process~~ of the relocater.

6. (currently amended) A data management apparatus according to Claim 5, wherein said address updater, when said reader is reading out the data from said data field on the

basis of the address of said data field stored in the pointer record, waits the updating process of the address in the pointer record until said reader finishes the reading process.

7. (currently amended) A data management apparatus according to Claim 1, further comprising:

a record deleter, when receiving a notification indicating that the application program does not use the ~~lend~~ lent pointer from the application program, deleting the pointer record having the ~~lend~~ lent pointer from said lending pointer table.

8. (currently amended) A data management apparatus according to Claim 1, wherein said data field is composed of a plurality of data setting areas, each data in said data field is stored by a single or plural data setting areas according to a size of the data, and the data management apparatus further comprises:

a data setting area management table storing information related to the use-condition of each data setting area;

an allocation controller referring to said data setting area management table ~~, and determining~~ to determine at least one of empty data setting areas in order to allocate ~~a~~ data requested to be added;

an adder storing the data requested to be added to at least one of the empty data setting areas which is determined by said allocation controller.

9. (currently amended) A data management apparatus according to Claim 8, wherein said data field holds the data in order of the address of the data setting area, each of the

data setting areas having an address value, and said data setting area management table holding an address of a next data setting area of a data setting area having ~~a~~ the biggest address value among the data setting areas which have been holding the data.

10. (currently amended) A data management apparatus according to Claim 8, wherein said data setting area management table holds a ~~minimum~~ starting address of a continuous empty area ~~, each by~~ corresponding to ~~the~~ a size of the continuous empty area, the continuous empty area is a single or plural empty data setting areas which occurred in said data field by deleting the data~~;~~, said allocation controller detects the ~~minimum~~ starting address of the continuous empty area corresponding to the size of data requested to be added from said data setting area management table~~;~~, and said adder stores the data to be added in the continuous empty area corresponding to the detected ~~minimum~~ starting address.

11. (currently amended) A data management apparatus according to Claim 8, wherein:

said address acquirer, when acquiring ~~acquires~~ the address, refers to said data setting area management table, and detects the use-condition of the data setting area corresponding to the acquired address from said data setting area management table; and

said lender, when the detected use-condition is under the condition of deletion of data, informs the application program that there is no data for which an access is requested by the application program.

12. (currently amended) A data management apparatus according to Claim 8, wherein said data setting area management table holds link information related to a link between data setting areas about a data held by the plurality of data setting areas, wherein the link information indicates a connection relationship of the plurality of data setting areas.

13. (currently amended) A data management apparatus according to Claim 8, wherein said data setting area management table, when a data stored in a data setting area is relocated to other data setting area, holds, ~~as~~ relocation condition information, ~~the information of the data setting area of a destination of the relocation corresponding to the information related to the use condition of the data setting area of a source of the relocation~~ including information indicating the data setting area corresponding to a relocation destination.

14. (currently amended) A data management apparatus according to Claim 8, wherein a single or plural data setting areas compose a data storage area for storing data; a size of the data storage area is defined depending on the number of data setting areas for composing the data storage area; said data setting area management table holds a frequency data summing up the number of times of allocation of data into the data setting area generated by addition of data and the number of times of release of data setting area generated by deletion of data, according to the size of the data storage area; and said allocation controller, when said data field has at least one of continuous empty areas and there is no continuous empty area which meets ~~the~~ a size of [[a]] data requested to be

added, determines at least one of data setting areas for storing the data requested to be added on the basis of the frequency data, wherein said allocation controller determines the at least one of data setting areas so that a continuous empty area with the size that the sum of allocation/release times indicated by the frequency data is a maximum is generated through the data allocation.

15. (canceled)

16. (currently amended) A method for managing ~~a plurality of~~ data ~~which are~~ used ~~in order to execute~~ when executing an application program included in a switching system for providing services related to communication ~~by a switching system~~, comprising steps of:

storing the ~~plurality of~~ data ~~into~~ in a data field;

acquiring an address ~~of the data~~ in the data field of the data for which an access is requested by the application program;

storing at least one of pointer records, ~~having~~ each of which has the acquired address and a pointer corresponding to the acquired address, ~~into~~ in a lending pointer table, the pointer indicating an address of the pointer record; and

reading out the pointer from said lending pointer table ~~and lending~~ to lend the read pointer to the application program.

17. (currently amended) A method according to Claim 16, further comprising steps of:

receiving the lent pointer from the application program;

reading out the address corresponding to the lent pointer from the lending pointer table;

reading out the data ~~storing~~ stored in the data field according to the read address ~~from said data field~~; and

giving the read data to the application program, wherein the address stored in the pointer record is changed into an address of a relocation destination in the data field in response to relocation of the data stored in the data field.

18. (currently amended) A method according to Claim 17, wherein the data field is composed of a plurality of data setting areas, ~~each~~ data to be stored in the data field is stored by a single or plural data setting areas according to a size of the data, and the method further comprises steps of:

storing information related to a ~~the~~ use-condition of each of the data setting ~~area~~ areas ~~into~~in a data setting area management table;

referring to the data setting area management table~~, and determining~~ to determine at least one of empty data setting areas in order to allocate ~~a~~ data requested to be added; and

storing the data requested to be added ~~into~~ in at least one of empty data setting areas which is determined.

19. (canceled)

20. (currently amended) A computer readable medium stores a program for managing ~~a plurality of~~ data ~~which are~~ used ~~in order to execute~~ when executing an application program included in a switching system for providing services related to communication ~~by a switching system~~, the program comprising steps of:

storing ~~the plurality of~~ data ~~into~~ in a data field;

acquiring an address ~~of the data~~ in the data field of the data in which an access is requested by the application program;

storing at least one of pointer records, ~~having~~ each of which has the acquired address and a pointer corresponding to the acquired address ~~into~~ in a lending pointer table, the pointer indicating an address of the pointer record; and

reading out the pointer from said lending pointer table ~~and lending~~ to lend the read pointer to the application program.

21. (currently amended) A computer readable medium according to Claim 20, wherein the program further comprising steps of:

receiving the lent pointer from the application program;

reading out the address corresponding to the lent pointer from the lending pointer table;

reading out the data ~~storing~~ stored in said data field according to the read address ~~from said data field~~; and

giving the read data to the application program, wherein the address stored in the pointer record is changed into an address of a relocation destination in the data field in response to relocation of the data stored in the data field.

22. (currently amended) A computer readable medium according to Claim 20, wherein the data field is composed of a plurality of data setting areas, ~~each~~ data to be stored in the data field is stored by a single or plural data setting areas according to a size of the data, and the program further comprises steps of:

storing information related to the use-condition of each of the data setting ~~area into~~ areas in a data setting area management table;

referring to the data setting area management table~~, and determining~~ to determine at least one of empty data setting areas in order to allocate a data requested to be added; and

storing the data requested to be added ~~into~~ in at least one of empty data setting areas which is determined.

23. (canceled)

24. (new) A data management apparatus managing data used when executing an application program included in a switching system for providing services related to communications, the data management apparatus comprising:

a data field to store data, wherein the data field is composed of data setting areas, each of which is allocated address value and has a fixed size, and the data is stored in one or more of the data setting areas corresponding to a size of the data;

a storage unit to store information related to use-conditions of the data setting areas, the information related to use-conditions of the data setting areas including:

(i) a data setting area starting address value, wherein storing the data to the data field is started from a data storing starting point defined to the data field, and a next address value of the address value of one of the data setting areas that has been storing the data and has the furthest distance from the data storing starting point becomes the data setting area starting address value; and

(ii) the first empty continuous area address value, wherein an empty continuous area consists of one or more data setting areas having an empty state and existing between the data setting areas where the data have been storing, the empty continuous area is generated by deleting the data stored in the data field, the empty continuous area has a size corresponding to the number of the data setting areas included in the empty continuous area, the address value of the data setting area included in the empty continuous area having the nearest distance from the data storing starting point becomes the first empty continuous area address value, and the first empty continuous area address value is stored in response to the size of the empty continuous area existing in the data field,

an adding unit adding the data to the data field in response to a request from the application program;

a delete unit deleting the data from the data field; and

a management unit managing the information stored in the storage unit, wherein when the adding unit adds the data to the data field, the management unit determines at least one data setting area allocated the data to be added based on the data setting area starting address value and/or the first empty continuous area address value stored in the storage unit, and updates the data setting area starting address value and/or the first empty continuous area address value

stored in the storage unit according to a result of determination, the adding unit adding the data to be added to the determined at least one data setting area.

25. (new) The data management apparatus according to claim 24, wherein the management unit retrieves the first empty continuous area address value corresponding to a size of the data to be added from the storage unit when the adding unit adds the data to be added to the data field, if the empty continuous area address value corresponding to the size of the data to be added is retrieved, the management unit determines that the data to be added is allocated to the empty continuous area with the retrieved first empty continuous area address value to post the retrieved first empty continuous area address value to the adding unit, when the adding unit stores the data to be added in the data field according to the posted first empty continuous area address value, the management unit updates the first empty continuous area address value in the storage unit corresponding to the size of the empty continuous area that the data to be added is stored.

26. (new) The data management apparatus according to claim 24, wherein the management unit retrieves the first empty continuous area address value corresponding to a size of the data to be added from the storage unit when the adding unit adds the data to be added to the data field, if the size of the data to be added is larger than a size of the largest empty continuous area on the data field, the management unit determines that the data setting area starting address value stored in the storage unit is made a starting point and the data to be added is allocated to the data field to post the data setting area starting address value to the adding unit, and when the adding unit stores the data to be added in the data field according to the posted data

setting area starting address value, the management unit updates the data setting area starting address value stored in the storage unit.

27. (new) The data management apparatus according to claim 24, wherein in case the empty continuous area corresponding to the size of the data to be added does not exist on the data field and the empty continuous area that is larger than the size of the data to be added exists on the data field, the management unit determines the latter as the empty continuous area used to allocate the data to be added, read the first empty continuous area address value stored in the storage unit corresponding to the latter to post to the adding unit, when the adding unit stores the data to be added in the data field according to the posted first empty continuous area address value, the management unit updates the first empty continuous area address value corresponding to the latter in the storage unit.

28. (new) The data management apparatus according to claim 27, wherein the information related to use-conditions of the data setting areas further includes information indicating a data allocating/releasing frequency corresponding to the size of each of the empty continuous areas generated on the data field, and wherein

the management unit refers the data allocating/releasing frequency information in case the empty continuous area corresponding to the size of the data to be added does not exist on the data field and the empty continuous areas that are larger than the size of the data to be added exist, and determines one of the empty continuous areas as an empty continuous area used to allocate the data to be added so that the empty continuous area having a high data allocating/releasing frequency is generated through allocating the data to be added.

29. (new) The data management apparatus according to claim 24, wherein

(A) in case a deletion of the data stored in the data field with the deleting unit causes an incidence of a new empty continuous area on the data field and a change of the first empty continuous area address value corresponding to the size of the deleted data, the management unit updates the corresponding first empty continuous area address value stored in the storage unit according to a result of the deletion, and wherein

(B) in case the deleting unit deletes the data stored in the data setting area adjoining the data setting area having the data setting area starting address value stored in the storage unit, the management unit updates the data setting area starting address value stored in the storage unit according to the result of the deletion.

30. (new) The data management apparatus according to claim 24, wherein the information related to use-conditions of the data setting areas further includes in-use/not-in-use information indicating an in-use state or not-in-use state of each of the data setting areas and link information indicating a link between the data setting areas that have been holding the data with the size that is larger than the size of one data setting area, and wherein

when receiving a relocation request of the data stored in the data field, the management unit

(1) determines, as a relocation target, the data stored in at least one data setting area including the data setting area adjoining the data setting area having the data setting area starting address value stored in the storage unit,

(2) determines the empty continuous area becoming a relocation destination of the relocation target data based on the first empty continuous area address value stored in the storage unit,

(3) when the relocation target data is relocated to the empty continuous area corresponding to the relocation destination, updates the in-use/not-in-use information stored in the storage unit related to the data setting areas corresponding to a relocation source and the relocation destination of the relocation target data,

(4) when the relocation of the relocation target data cause a change of a link between the data setting areas, updates the link information stored in the storage unit,

(5) when the relocation of the relocation target data cause a change of the first empty continuous area address value, updates the first empty continuous area address value stored in the storage unit,

(6) when the relocation of the relocation target data cause that the data setting area adjoining the data setting area with the data setting area starting address value becomes the not-in-use state, updates the data setting area starting address value stored in the storage unit.